Partnership Preserves Historic Range Research Sites

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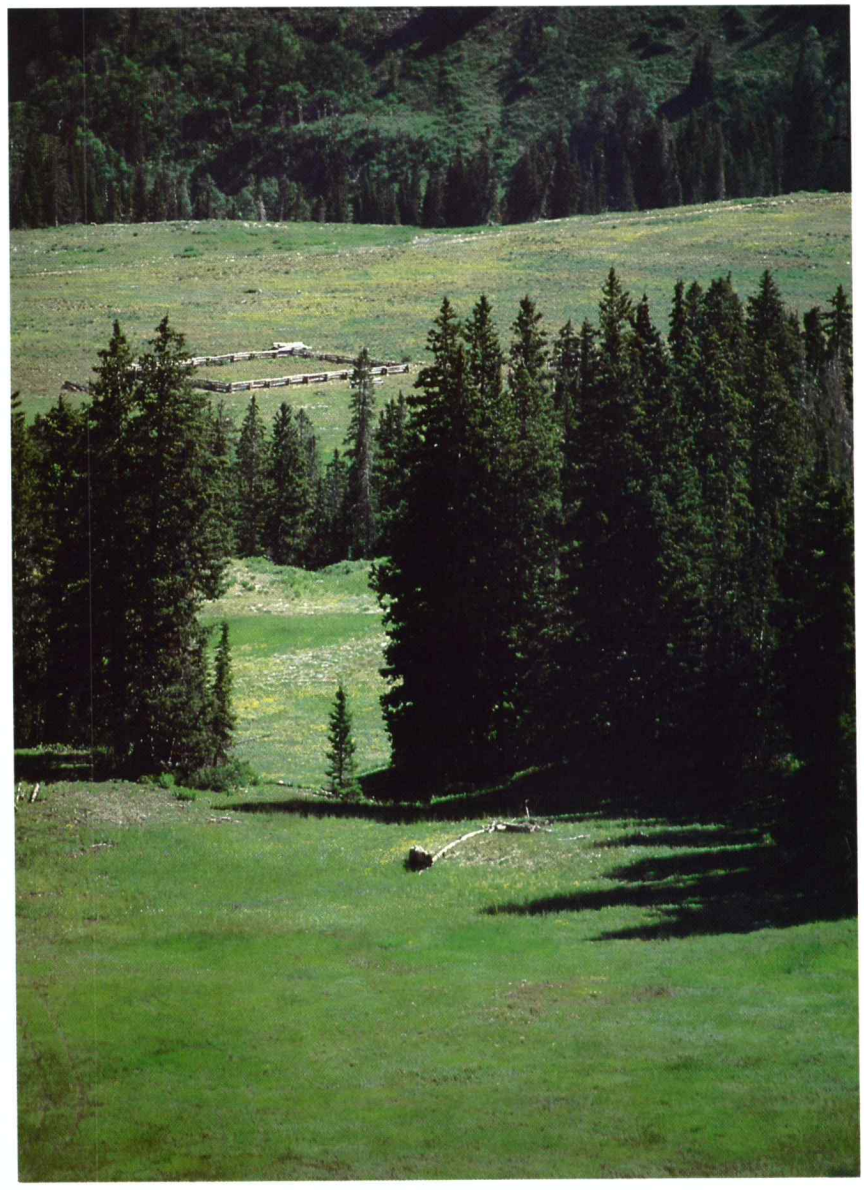
A team of 109 volunteer workers from government agencies, universities, and other institutions combined forces at the Great Basin Experimental Range east of Ephraim, Utah, on July 13–14, 1990, to preserve some of the oldest range research sites in the world.

Starting in 1912, pioneer range ecologist Arthur W. Sampson built log exclosure fences to protect his study plots from domestic livestock grazing. After 78 years of deep snow and decay, Sampson's fences had decayed to the point livestock could step across them and graze the study sites. Grazing study sites that had been protected for 78 years would mean destroying a tremendous accumulation of data about natural succession without grazing impact.

Chain saws roared and the chips flew as they sawed and chopped the notches to fit logs together into new grazing-enclosure fences, replacing old fences designed to protect permanently located study sites from sheep and cattle. Teams of six-to-eight workers laboriously maneuvered the awkward green logs into place. After fitting the heavy logs properly in the notches, sledge hammer-swinging scientists, college professors, and engineers pinned them in place with huge spikes, using the same primitive skills and tools used to construct the first protective barriers 78 years earlier.

"I look at the Great Basin Station studies as important to the Forest Service," Forest Service scientist Steve Monsen says, "because of the variety of closely interconnected and valuable information that they contain." Monsen, a botanist with the Intermountain Station's Provo Shrub Sciences Laboratory, describes the value of the long-term study data collected over 70 years relating climate and vegetation changes. "What better place to learn about the potential of vegetation changes resulting from global climate change?" he asks.



Philadelphia Flat with exclosure, Great Basin Experimental Range, Manti-La Sal National Forest, Utah.

Arthur W. Sampson, the first range ecologist employed by the Forest Service and one of the founders of the science of range management, built the first grazing exclosures at the Great Basin Station in 1912, even before constructing a place to live at the Station (Stoddart 1950). After building the exclosures, he mapped "quadrat" plots both inside the exclosures and outside in the grazed areas to document the plant composition and amount of bare soil.

The Station was established on the Wasatch Plateau following devastating floods near the turn of the century that filled the streets of nearby Ephraim and Manti with mud and boulders. Sampson and James Jardine, the head of the Office of Grazing Studies, decided that the location was the best of several considered to learn about the relationship between overgrazing and the spring floods that were then common in

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Using only muscle power, volunteers put the heavy logs in place.

several western states. The Department of Agriculture wanted the Forest Service to study how overgrazing damaged rangelands and find ways to restore the damaged land.

By 1989 Sampson's old log-and-block exclosure fences were so rotten and dilapidated that it was obvious that after one more winter's snow load there wouldn't be enough fence left standing to keep livestock out. But neither the Manti-LaSal nor the Intermountain Station had funding to replace the fences. Forest Branch Chief Joel Frandsen, president of the Utah Section of SRM, and Monsen conspired to rebuild the oldest exclosures with combined volunteer work days.

"Sampson was a true ecologist," Monsen says, describing how each exlosure, built at a specific elevation, is tied to a climatological station that recorded weather data for the site. He adds that Sampson started some of the first range phenology, or plant development, studies correlated with both elevation and weather patterns. Monsen explains that the exclosures are controls, or comparison areas, for many related research projects, including watershed reclamation and range revegetation.

Frandsen and Monsen divided the volunteers into three groups with leaders, each assigned to a different exclosure. Work started with a safety meeting and as new volunteers arrived Frandsen handed them a hard hat and gave the safety meeting over again. By evening an accident-free but tired crew returned to the old Great Basin headquarters for a feast of dutch oven-roasted lamb.

Fresh reinforcements from the Society arrived the second day including people from the Bureau of Land Management, the Soil Conservation Service, and Brigham Young University, producing additional hybrid vigor in the work force. By mid afternoon five exclosures stood completed, ready to protect the research sites from the herds of domestic sheep already trailing towards their high summer range. Grinning through the blisters and sore muscles, volunteers said good-bye with talk of next year and more decayed exclosures waiting on the mountain.

After the dust settled, Monsen praised the project for its secondary benefit of education. Over a hundred people knew more than before about the history of the old Great Basin Experiment Station, first named the Utah Experiment Station, and the value of the work done there to developing the art and science of range management.

Basic principles of range management, now usually taken for granted, were born from the early research of Sampson and colleague James T. Jardine. Four of these principles are still at the foundation of range man-

District Ranger Ira Hatch provided direction in using the traditional skills needed to build log-and-block fence.

Clyde Blauer, biology professor from Snow College, drives a spike to pin down a log.

agement: (1) Using the kind of livestock best adapted to the range, (2) grazing proper numbers, (3) grazing in proper season, and (4) getting good distribution (Reid and Price 1960).

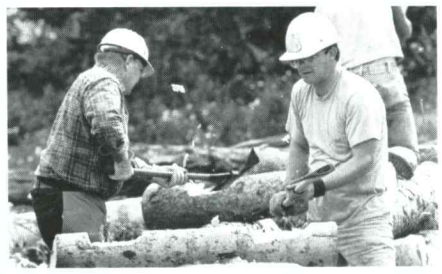
Beginning in 1914, Sampson advocated deferment and rotational grazing (Keck 1972). His early work at the Great Basin Station provided some of the documentation of the relationship of grazing to plant succession, seed production, and seedling establishment.

He left the Station in 1922 to teach at the University of California Berkley, and while there wrote the first "bibles," or textbooks of range management, based mostly on his Great Basin research (Keck 1972; Sampson 1923, 1924, 1928).

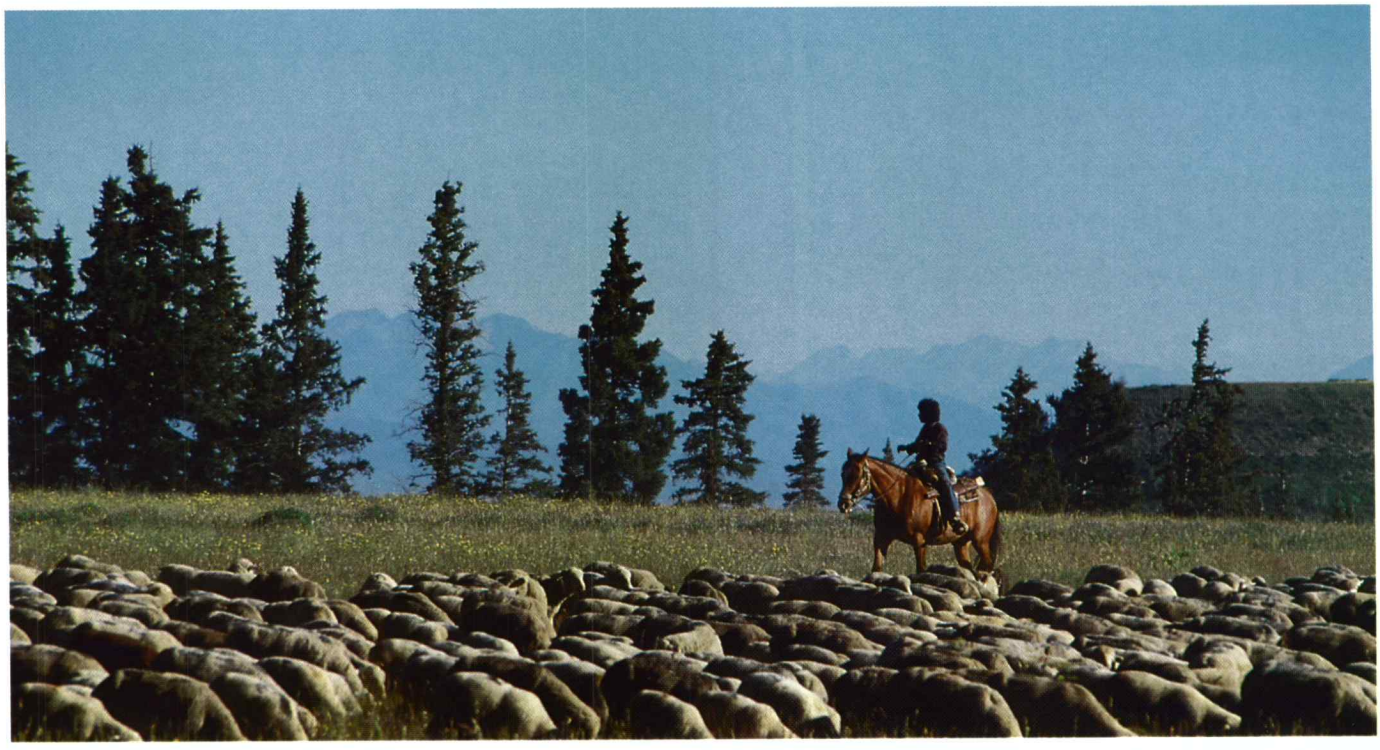
Other early work at the station established the concept of proper grazing utilization levels to prevent damage and protect watershed conditions. Some of the first knowledge about natural and artificial reseeding developed from work at the Station, during the 1920's (Keck 1972). Perry Plummer's later landmark work on range reseeding was based at the Station (Plummer and Stewart 1944, and Plummer et al. 1955). Station scientists also worked on problems of grazing efficiency, herding methods, water developments, and poisonous plants.

Sampson strove to develop practical range evaluation methods that could be used by ordinary range managers. With them in mind, Sampson and his old University of Nebraska professor Frederick E. Clements developed the concept of indicator species to help evaluate range condition (Stoddart 1950). Later at the Station, ecologist Lincoln Ellison developed condition and trend criteria to guide managers in caring for the land (Ellison 1949).

C.L. Forsling and Joseph F. Pechanec, who succeeded Sampson as directors of the Station, refined his work developing grazing systems. Then in 1961 Hormay and Talbot championed "rest rotation" grazing, a further refinement of concepts first developed at the Great Basin Station (Hormay and Talbot 1961). "The biological facts for development of sound



Chips flew as workers pieced the logs together into a fence.



Sheep continue their long history of grazing on Philadelphia Flat.

grazing methods have been known for a long time." Hormay said in 1970. "As far back as 1914, A.W. Sampson outlined many principles of good grazing management," (Hormay 1970).

Pechanec, who first worked at the Station in 1932 and later returned as Director of the Intermountain Forest and Range Experiment Station, of which Great Basin had become a branch, served as the first President of the Society of Range Management, 1947-1948. In his presidential address, Pechanec said, "One of the greatest challenges we have is to determine how by research, and to prove by practice that grazing livestock and big game in our forests and on our grasslands need not necessarily be damaging to the land, ruinous to the watersheds, and destructive of civilization," (Keck 1972). Pechanec's statement links the value of Sampson's exclosures and first research to what is the hottest controversy challenging the Society in 1991.

SRM Utah Section President George Cook saws a notch in a bottom block.

Today, aside from research, a primary value of the Great Basin Experimental Range as it is now called, lies in conservation education—to convey to the American people success stories that resulted from Pechanec's first presidential challenge to the Society. Sampson's 70-year-old exclosures yield evidence few would have anticipated: they show that range properly managed is just as healthy or more healthy than land completely protected from livestock grazing for over seven decades. The same exclosures that demonstrated the value of rest to ranchers in 1931, demonstrate the practicality of sound stewardship with grazing in 1991. The experimental range provides a wealth of lessons in range, watershed, and wildlife management. And with long-term climatic data collected in three life zones it's an ideal laboratory and classroom for global climate change.

The new Aspen Exclosure protects old range studies from human as well as livestock disturbance.

The Forest Service is aggressively promoting the conversion of the old station headquarters to an interpretation and education center. The old headquarters, now an historic site, must be restored and maintained to meet health and safety standards before university tours, 4-H groups, environmental groups, or others may be invited to stay at the Station.

"Great Basin may be regarded as one of the two cradles of range research in this country," Linc Ellison told a group at Utah State Agricultural College in 1939 (Keck 1972). (Ellison gave Jornada Range Reserve in New Mexico as the other). Visiting the Great Basin Experimental Range inspires one to beg the question, what better place to tell the story of range management? The 100-plus workers who labored to save Sampson's exclosures would respond, "This is the place!"

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